

**DIGONOGASTRA: THE CORRECT NAME FOR NEARCTIC
IPHIAULAX OF AUTHORS (HYMENOPTERA, BRACONIDAE)**

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Abstract.—The braconine genus *Iphiaulax* Foerster although frequently taken to include Nearctic and Neotropical species, is in fact restricted to the Old World. The correct generic name for most New World *Iphiaulax* of authors is *Digonogastra* Viereck. *Digonogastra* and its type species (*D. epicus* (Cresson)) are redescribed and illustrated. Diagnostic features of *Digonogastra* and *Iphiaulax* are provided. *Monogonogastra* Viereck is a junior synonym of *Digonogastra* Viereck.

Key Words: *Digonogastra*, *Iphiaulax*, *Monogonogastra*, Nearctic fauna, Braconidae, Braconinae

The Nearctic fauna of braconine wasps contains a number of described and many undescribed species that have traditionally been treated as species of *Iphiaulax* Foerster. *Iphiaulax* (type-species: *Ichneumon impostor* Scopoli) was originally described from Europe and is distributed throughout the Palearctic, Afrotropical and Indo-Australian regions. However, during the course of a revision of the World genera of Braconinae, it has become apparent that most, if not all, of the New World '*Iphiaulax*' species are not congeneric with those from the Old World despite some superficial resemblance. Viereck (1912) erected two new genera, *Digonogastra* and *Monogonogastra*, to receive a number of species of Nearctic *Iphiaulax* of authors on the basis of small differences in metasomal sculpture, but he still considered that *Iphiaulax* occurred in North America, and subsequently, Muesebeck & Walkley (1951) synonymized both of Viereck's genera with *Iphiaulax*. *Digonogastra* which is a senior synonym of *Monogonogastra*, appears to be the oldest available name for the Nearctic *Iphiaulax* group. In order to clear up these misunderstand-

ings *Digonogastra* is redescribed below and features are given which enable its separation from *Iphiaulax* Foerster, and from the other New World genera of Braconinae. Many species will be reclassified elsewhere (Quicke, in press a).

Terminology follows that of van Achterberg (1979). The type material is located in the United States National Museum, Washington (USNM).

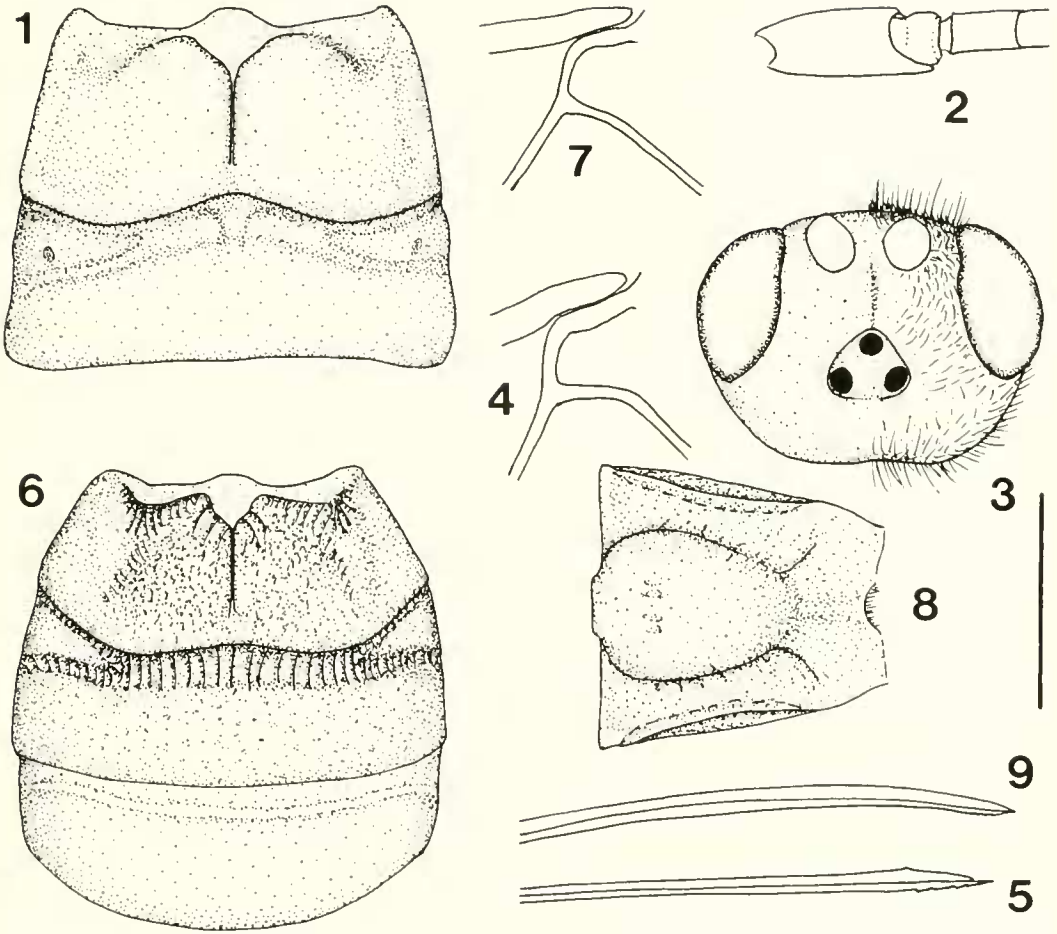
***Digonogastra* Viereck**

Figs. 1-9

Digonogastra Viereck, 1912. Type-species: *Bracon epicus* Cresson, 1872; monobasic and original designation.

Monogonogastra Viereck, 1912. Type-species: *Bracon atripectus* Ashmead, 1889; monobasic and original designation.

Females.—Antennae approximately as long as the forewing. Median flagellomeres wider than long. Scapus sub-cylindrical, longer ventrally than dorsally, apicolaterally and (weakly) apicomediaally emarginate (Fig. 2). Labiomaxillary complex not clon-



Figs. 1-9. Features of *Digonogastra* spp. 1-5. *D. epicus* 1, Metasomal tergites 1 & 2, dorsal aspect. 2, Right scapus, pedicellus, and basal flagellomere, lateral aspect. 3, Head, dorsal aspect. 4, Junction of veins 1-SR+M and 1-SR of right forewing. 5, Distal part of ovipositor. 6-9. *Digonogastra* selected species. 6, Metasomal tergites 2-4, dorsal aspect. 7, Junction of veins 1-SR+M and 1-SR of right forewing. 8, 1st metasomal tergite dorsal aspect. 9, Ovipositor. Scale line: Figs. 1-3, 6-7, 1.0 mm; Fig. 4, 0.67 mm; Figs. 5, 9, 1.3 mm; Fig. 8, 0.8 mm.

gate. Lower part of clypeus more or less strongly reflexed into the hypoclypeal depression, separated from the upper part by a carina. Clypeus usually separated from the face by a weak carina though sometimes the two are more or less contiguous. Face usually densely long setose. Eyes virtually glabrous. Frons usually generally, evenly impressed with a mid-longitudinal sulcus; usually extensively densely setose (Fig. 3), the setae often being more or less prostrate

and silvery in appearance. Prosoma moderately contracted behind the eyes.

Mesosoma usually extensively setose, especially the scutellum, mesosternum and propodeum, smooth and shiny between the setae. Notauli usually distinctly impressed along most of the length of the mesoscutum. Scutellar sulcus usually narrow and distinctly crenulate. Precoxal suture absent. Pleural suture smooth and almost obliterated. Propodeal spiracle situated at about the middle

of the propodeum, approximately $2 \times$ taller than long.

Forewing: Marginal and 2nd submarginal cells long. Vein 1-SR+M usually distinctly angled posteriorly shortly after arising from 1-SR (Fig. 4), but more or less straight in some species (Fig. 7). Vein cu-a usually interstitial, sometimes marginally postfureal. Veins 1-SR and C+SC+R forming an angle of more than 55° (often 80°). Vein 1-M straight. Vein 3-CU1 not or hardly expanded posteriorly.

Hindwing: Vein 1r-m at least slightly shorter than SC+R1. Apex of vein C+SC+R with more than 1 especially thickened bristle (hamule), unless the length of the forewing is less than 5 mm. At least with a small glabrous area postero-distal to vein cu-a.

Claws with small, rounded basal lobes. Anterolateral aspect of fore tibia densely setose, without an apical transverse row of thick, peg-like bristles. Hind tibial spurs densely setose.

Metasoma generally depressed; general sculpture variable from largely smooth to rugose or foveate. 1st metasomal tergite with very well-developed dorso-lateral carinae and with a raised medial area which is well-separated from the dorso-lateral carinae. Median area of 1st metasomal tergite usually with at least a trace of a mid-longitudinal carina for a short distance on its posterior third, though sometimes this is only indicated by a pair of sub-medial pits (Fig. 8). 2nd metasomal tergite always with a distinct mid-basal area which is usually produced to form a mid-longitudinal carina (Figs. 1, 6); with a pair of posteriorly diverging furrows running from the anterior corners of the mid-basal area. Posterior margin of 2nd metasomal tergite moderately sinuate. 2nd suture variable, smooth or crenulate. 3rd metasomal tergite with large antero-lateral areas defined by a pair of posteriorly diverging furrows; often with a distinct, sometimes large, mid-basal triangular

area (Fig. 1). 4th–6th metasomal tergites only rarely with a distinct transverse, subposterior groove. 4th–6th tergites with a transverse peri-basal groove but this groove not divided laterally to demark anterolateral areas. Ovipositor between $0.25 \times$ & $3.0 \times$ length of metasoma; highly variable (Figs. 5, 9), sometimes slender with a pre-apical dorsal nodus and apico-ventral serrations, but sometimes thickened without a pre-apical dorsal nodus and with very reduced apico-ventral serrations.

Males.—Similar to females. Digitus of genitalia with 4 (or sometimes 3) well-developed and widely separated, tooth-like processes dorso-laterally. Basal ring anteriorly pointed but not produced into a spine.

Notes on Digonogastra. *Digonogastra* species display a remarkable superficial resemblance to *Iphiaulax* species, many also having evolved a thickened ovipositor without a dorsal nodus. *Digonogastra* species may however, be distinguished from those of *Iphiaulax* by a number of features. Perhaps surprisingly, the most consistent feature appears to be the presence of a clearly-defined and often large raised mid-basal triangular area on the 2nd metasomal tergite of *Digonogastra*; such an area is never present in *Iphiaulax*. In addition, most *Digonogastra* species have an extensively, densely setose frons, the setae often being relatively long and lying rather flat, and the 3rd to 5th metasomal tergites lack a transverse subposterior groove (though this is present in *Digonogastra ornatus* (Provancher)). In *Iphiaulax* the frons is always completely glabrous except adjacent to the eye, and the 3rd–5th metasomal tergites nearly always have a transverse, subposterior groove. However, perhaps the most important feature separating *Digonogastra* from *Iphiaulax* is the presence of four (occasionally three) well developed tooth-like processes on the digitus of the male genitalia in *Digonogastra* whereas in *Iphiaulax* there is only one. The presence of four digital teeth

has recently been shown to characterize a group of apparently closely related genera from both the Old and New worlds, (Quicke, in press b) typified by Afrotropical genera *Archibracon* Saussure and *Sororarchibracon* Quicke. Of the Neotropical genera, four digital teeth are also present in *Megabracon* Szepligetii and *Lasiophorus* Haliday, and this may indicate that *Digonogastra* is derived from this Neotropical assemblage of braconine genera.

For practical purposes, *Digonogastra* can be separated from *Iphiaulax* by the presence in the former of a medium sized to large mid-basal triangular area on the 2nd metasomal tergite. In the recent key to the Old World genera of Braconinae provided by Quicke (1987), *Digonogastra* spp. with a preapically smooth ovipositor will key to couplet 95 and some will run out to *Bracomorpha* Papp at couplet 96. *Digonogastra* spp. with a nodus on the ovipositor will run to couplet 125 and most will run (with some difficulty) to *Poecilobracon* Cameron.

Digonogastra epicus (Cresson)

Figs. 1-5

Bracon epicus Cresson, 1872.

Material examined.—Female holotype in USNMW: "Texas Bellfrage" & "Type No. 1611 U.S.N.M." One female in the author's collection: "Merivale, Ont. 5.viii. 1980 J. J. de Gryse"; one female in USNM: "Dawson Camp, Salt River Ariz" & "CHT Townsend coll. sep 4" both compared with the holotype.

Females.—Length of body 10-12 mm, of forewing 11-13 mm and of ovipositor (exserted part) 7.0-7.5 mm.

Antennae with 51 flagellomeres. Penultimate flagellomere $1.3\times$ longer than wide. 1st flagellomere 1.6 and $1.8\times$ longer than the 2nd and 3rd respectively, the latter being $1.1\times$ longer than wide. Scapus almost cylindrical, approximately $2.2\times$ longer than maximally deep (Fig. 2). Hypoclypeal hair-

brushes well developed. Upper part of clypeus finely punctate. Clypeus clearly demarcated from face by elevation and by a finely crenulate groove. Height of clypeus: intertentorial distance: tentorio-ocular distance = 10:29:18. Face densely silvery setose and punctate, smooth and shiny between the punctures. Width of face: width of head: height of eye = 29:59:27. Lateral half of frons on either side moderately densely covered with rather prostrate silvery setae. Distance between posterior ocelli: diameter of posterior ocellus: shortest distance between posterior ocellus and eye = 10:9:23. Head rather strongly contracted behind the eyes. Occiput sparsely setose.

Mesosoma $1.6\times$ longer than high. Pronotum largely glabrous laterally; lateral pronotal groove only (weakly) crenulate at the front of the pronotum. Propleuron moderately densely long setose. Middle lobe of mesoscutum rather strongly protruding in front of the lateral lobes. Mesoscutum largely glabrous except along line of notauli. Scutellar sulcus crenulate. Scutellum rather sparsely setose. Mesopleuron sparsely setose posteriorly. Mesosternum moderately densely setose. Median area of metanotum glabrous. Propodeum and metapeuron extensively, densely long setose.

Forewing.—Lengths of SR1:3-SR:r = 80:51:10. Vein 1-SR+M distinctly angled posteriorly shortly after arising from 1-SR. Veins C+SC+R and 1-SR forming an angle of approximately 60° .

Hindwing.—Lengths of veins 1r-m: SC+R1 = 19:27. Apex of vein C+SC+R with 2 to 3 thickened bristles (hamules). Postero-basal part of wing with a moderately large glabrous area.

Length of fore femur: tibia: tarsus = 47:57:76. Fore basitarsus approximately $5\times$ longer than maximally deep.

Metasoma largely smooth and shiny. Elevated median area of 1st metasomal tergite largely smooth, the mid-longitudinal carina at most only indicated by a pair of small

weak submedial depressions, often absent; bordered antero-laterally by a few rugae. 2nd metasomal tergite approximately $1.9\times$ wider than maximally long; with a clearly-defined though rather small, raised mid-basal area which is produced into a mid-longitudinal carina posteriorly. 2nd metasomal suture and transverse peribasal grooves of the 4th to 6th tergites smooth. Tergites 3 to 6 sparsely setose. Ovipositor (part extending beyond the apex of the metasoma) approximately $0.7\times$ length of forewing; with a pre-apical dorsal nodus and apico-ventral serrations.

Antennae, head, mesosoma, legs and ovipositor sheaths black; metasoma bright red; wings pale brown with dark brown venation.

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